

A CASE OF BRAIN TUMOR.¹

By NATHAN JACOBSON, M.D.,

OF SYRACUSE,

PROFESSOR OF CLINICAL SURGERY IN THE COLLEGE OF MEDICINE, SYRACUSE
UNIVERSITY.

MALE, æt. 52 years. Until recently railway conductor; of late commercial traveler. First wife died about eighteen months ago. Remarried ten months ago. Had with first wife five children, of whom four are living, the oldest æt. 23 years, the youngest æt. 13 years. One daughter died of pulmonary tuberculosis. Patient given to excessive indulgence in tobacco-chewing constantly, and rarely expectorating the juice; and also to great venereal excess. The death of his first wife was very sudden and unexpected. Though having suffered from a cardiac lesion for years, she retired in her usual health at night. At 3 o'clock in the morning her husband was awakened by her labored breathing, and before medical aid could be obtained she died.

On the afternoon of July 24, 1890, the patient with his wife and youngest child were at the Thousand Islands in a row boat. As the boat was nearing the shore the patient felt his left arm suddenly drop to his side, and realizing that he was unable to manage the boat called loudly for help. His son, as noted, a boy of 13, is certain that his father shook convulsively. The wife in the excitement of the moment did not notice. With the help that came to them, the boat was brought to the shore. The patient had not lost consciousness. The loss of motion in the arm was temporary. He was soon able to move about, and indeed walked to the further end of Round Island, a distance of perhaps three quarters of a mile, to consult a physician. The attack was considered to be one of sunstroke.

From this time on until the patient consulted me, which was on August 10, 1890, he had repeated attacks not of loss of motion, but

¹Read at a meeting of the Syracuse Medical Association, December 2, 1890.

of clonic convulsions of the left arm. Each attack, he thought, continued for about five minutes, and they recurred sometimes several times a day, and again but once daily; or there might be an interval of several days between them. Otherwise he felt well enough to pursue his vocation, which necessitated his making short railway trips. He ate well, but did not sleep well.

About 3 o'clock each morning, the hour, as he put it, at which he found his wife dying, he would be awakened. If at this time he had no convulsion he would frequently get up, dress, go down stairs, and read. Examination failed to reveal, August 10, 1890, any signs of weakness in the left arm, any disturbance of the reflexes, or of vision. There was not, nor had there been, any headache. The patient did not recall at the time ever having sustained any injury to head. He never had otorrhœa, nor any other suppurative affection. The urine was examined, but aside from a very low specific gravity, it was normal.

With the absence of any positive signs to indicate an organic disturbance, and with the evidence of habits and a state of mental agitation that might account for possibly a chorea, the patient was put upon bromides, and advised to discontinue the use of tobacco and avoid venereal indulgence.

However, despite this line of treatment the condition did not improve. The convulsive attacks were if anything more severe. Mild doses of strychnia and galvanism applied with the positive pole to the back of the neck and the negative held in left hand increased the frequency and severity of the seizures.

August 28, 1890, the patient complained that the left leg exhibited also clonic movements, not as severe, but occurring synchronously with those of the arm. Until now the patient had felt absolutely well after the attacks, and in the interim between them. About this time he noticed that upon arising he could not readily gain a footing. He felt inclined to turn around several times before he could gain his equilibrium. The left arm and hand now became slightly enfeebled.

The patient at this time as on previous occasions denied absolutely the possibility of any syphilitic infection. He was notwithstanding put upon the potassium iodide in ten grain doses in connection with a similar dose of the bromide of potassium.

Three days later he was awakened at 3 A. M. with the most severe convulsion he had had. Immediately thereafter there was evident paresis, of a mild type, of both the upper and lower extremities of the left side. In walking he would swing his leg describing a circular

movement instead of projecting it directly before him. For a week he had no further convulsion.

At this time, September 7, 1890, it was very evident that the paresis was deepening into a decided paralysis. The patient had been able until now to come to my office; but his family realizing his growing loss of motion had recently not allowed him to go unattended. The iodides produced such sharp catarrhal symptoms of the nose and eyes, and as no benefit attended their use, they were discontinued. The patient manifested no muscular incoordination nor had there been, though frequently searched for, any sign of facial paralysis. During the night of September 13, 1890, he had his last convulsive seizure. Four days later, for the first time, he complained of headache. The cephalalgia was limited to the right temporal and frontal regions. It grew most intense, of a boring, clutching, twisting character as the patient described it. It was so severe that merely touching the bedding or moving the patient greatly aggravated it. At first it was controlled by phenacetine, antipyrine and the bromides; but later only opiates afforded relief. He lay with his face buried in the pillow, with the room darkened, and the utmost quiet had to be maintained about him. This pain persisted for two weeks. During this period it was evident that the paralysis was deepening. When on September 27, 1890, the pain ceased and he was again able to sit up, it was too plain that not only was the left upper extremity completely, and the left lower nearly paralyzed, but also that the left half of the face had now become similarly affected.

During the entire sickness the temperature was closely watched; but never, at any time, was there any suggestion of fever.

The absence of fever, of any etiological data to account for the presence of a brain abscess, the steadily progressive signs of brain compression, made it altogether probable that we were dealing with a brain tumor.

Careful examination of the scalp brought to light a scar close to the median line and situated about an inch anterior to the binauricular line.

The patient had forgotten until reminded by his brother that in 1866 he had received a blow upon his head from a falling timber; but the location of this scar did not correspond to the area of the brain probably involved. The presumption was that a growth existed in the right motor tract, and that assuming that the initial symptoms marked the site of its beginning, that it commenced in the center of the right ascending frontal convolution, spread at first upwards, involving

the upper third of the ascending frontal and parietal convolution, and later reversing its course proceeded downwards and attacked the convolutions at the lower end of the Rolandic fissure. The very rapid progress was strongly suggestive of a malignant and infiltrating tumor.

Holding to this view I could not urge an operation with any assurance of a successful issue. However the utter hopelessness of the case under simply medicinal treatment induced me to strongly impress upon the family that in surgical measures alone lay the only hope of relief.

Dr. H. D. Didama, who saw the patient September, 28, 1890, concurred in my diagnosis, and suggested a return to the antisyphilitic treatment. The iodide was rapidly crowded to 30 grains three times daily, and one drachm of mercurial ointment was thoroughly rubbed into the patient morning and evening. The bowels were kept open with either Rochelle or Epsom salts.

For a few days the head was very free from pain. His mental condition improved. The pulse which all through had ranged from 60 to 66 increased to 78. But on October 4, 1890, the patient became quite somnolent. The paralysis of the lower extremity was all but complete, slight motions of the foot alone responding to hard punching of the leg.

On October 6, 1890, the patient's somnolence amounted almost to coma. The pulse beats numbered 90. The urine was occasionally voided in bed. Deglutition was tardy, the patient holding fluids in his mouth for some time, before swallowing them. His speech was not as intelligible, and a mild delirium of muttering character appeared.

On the following day the breathing though regular was stertorous. Moderate internal strabismus of the eye appeared. Unless a great effort was made to arouse him he remained in this comatose condition. A finger carried into his mouth found in the pharynx several grapes that had been lodged there for a day or more.

On October 9, 1890, all the urine was voided unconsciously while the patient lay in deeper stupor than ever, and the breathing was very stertorous. Yet on the next day he exhibited a wonderful return of mental activity, intelligently taking part in conversation. He drank freely, holding the glass himself and carrying it to his lips. Indeed his family were sufficiently encouraged by this improvement to reconsider their former objections to any operative interference. The paralytic condition exhibited no change.

The amelioration however was so very transitory that it was deemed

unwise to open the skull. October 11 found him with a little return of pain in the head, lessened mental vigor, deepening somnolence, and involuntary action of the bladder. The temperature remained normal.

October 13, there was a suggestion of the Cheyne Stokes respiration, and a protraction of some of the pulse beats; on the 14th, deep coma set in. A slight rise in temperature to 99.5° occurred. He could no longer be aroused to take any nourishment. The indications of deep compression deepened, and the patient passed quietly away on the 16th.

Autopsy held October 19, 1890. Present, Drs. Didama, Sears, Magee, Moore and myself. Before beginning the post-mortem examination, that I might see how well I had located the tumor, I outlined the fissure of Rolando, and carried an awl through the skull into what was presumably the centre of the ascending frontal convolution and also what should be the upper and lower limits of our growth.

The incision of the scalp was made from mastoid to mastoid. The skull-cap removed. On the right side of the brain, corresponding to the junction of the parietal and frontal convolutions was a marked bulging, perhaps 3 inches diameter. Upon palpation the mass was soft, the elasticity very suggestive of fluctuation. Upon the vertex, about the site of the bregma, the two halves of the cerebrum were held together by an adhesive meningitis—presenting an aggregation of minute tubercles. Along the vessels of the pia, turbidity existed and fluid was present in the arachnoid to an abnormal extent. Enough of the pia was removed from the site of the projection to show the surface of the convolutions which presented no discoloration.

The cerebral hemispheres were separated. As the longitudinal fissure was spread out, on the inner portion of the right hemisphere, corresponding to the site of the growth, could be seen a mass, reddish gray in color.

It should be said that with the awl I had absolutely located and outlined the tumor.

An incision was now made through the corpus callosum, perhaps $\frac{1}{8}$ of an inch to the right of the middle line, and the right lateral ventricle exposed; a very slight increase of fluid was found here. The finger was carried into the anterior horn of the right lateral ventricle, and with a scalpel the right frontal lobe was incised. The posterior horn was similarly treated.

The two incisions were united by longitudinal ones. Now, there came to light a soft infiltrating tumor with its outline fading into the white brain tissue; its borders red or reddish gray. Its centre in a process of softening, partially excavated and presenting a grayish or even

greenish discoloration. Towards the surface of the cerebrum it spread out and presented its greatest diameter. The growth was oval, antero-posteriorly nearly 3, and vertically 2 inches in diameter.

The site of the greatest degeneration, and probably, therefore, of the greatest age, or in other words, the starting point of the growth, was in the centre of the ascending frontal convolution. This point was exactly indicated by the awl.

A corresponding point of the ascending parietal was involved as was also the upper part of these convolutions and also their lower third, but less extensively. The growth extended from within one-half inch of the surface of the cerebrum almost to the corpus callosum.

The left lateral ventricle was opened. Here there was more fluid than in the right one, while the choroid plexus was so œdematous that it almost seemed to have undergone cystic degeneration.

Dr. F. W. Sears has carefully examined the tumor microscopically, and finds it to be a glio-sarcoma.

REMARKS.

In the consideration of this case there are two lines of inquiry to be pursued: first, that pertaining to the diagnosis; and second, that of treatment.

In reaching a conclusion as to the character of the affection, we were in the earliest period of the disease confronted with the question, "Are we dealing with a series of nervous explosions which express only the patient's reduced nervous tone, or is there an organic cerebral disease?"

The patient's habits, the recent unexpected death of his wife, the recurrence of nervous manifestations at the exact hour of her demise, gave color to the theory that the trouble might be only hysterical.

But the steady progression despite the enforcement of restrictions and the administrations of remedies that should have controlled the manifestations, had they been only of functional origin, forced upon the medical attendants the conclusion that there must be an organic lesion to explain the trouble.

What data had we to establish exactly the particular nature of the lesion? Let us remember that we were dealing with a case which was making very rapid progress. From the very earliest manifestations at the close of July until the autopsy was held less than three months intervened. The symptoms

early were those of brain irritation; late, those of brain compression.

They were not sufficiently violent nor rapid to speak for an inflammatory affection. It was rather evident that we were dealing with a pathological change within a limited area of the brain and that in all probability it must be either a brain abscess or a tumor.

With either there would be an increased intra-cranial pressure and, depending upon the site, there would be given signs by which we might localize the lesion.

To reach a differential diagnosis between the two, it is necessary to study more closely the history of the case, *i. e.*, in its etiological bearings, the course of the disease and the constitutional manifestations.

It is recognized to-day that primary idiopathic abscess of the brain does not occur. Suppuration here may either follow a trauma and indeed one in which there is laceration of the soft tissues, or be secondary to some existing suppurative affection.

Under the latter head, otitis media is the most frequent source of infection. Yet empyema, gangrene of the lungs, bronchiectasis or some other remote suppurative disease may awaken metastatic abscess of the brain. Nothing of this kind was present in our patient.

Von Bergmann, who has recently given us a really classic work upon the operative treatment of brain diseases, lays great stress upon the etiological element in reaching a diagnosis. Wernicke, a recognized authority on brain diseases, had diagnosticated a case as brain abscess and referred it to Von Bergmann for operation. This the latter refused to do, simply because there was no evidence of pre-existing trauma or suppuration. A few days later the patient died, and the good judgment of the surgeon was borne out at the autopsy. As the disease proved to be an extensive inoperable infiltrating brain tumor.

Secondly, there was no evidence of constitutional disturbance such as we would expect to find with pent up pus. The symptoms throughout were merely those of compression and never of pyemic infection.

At no time did the patient have either chills or fever. The temperature was taken at various times of the day, but until towards the very close was found to be absolutely normal. There were no digestive disturbances. No morning improvement nor evening depression, or aggravation of symptoms; no loss of appetite until within a few weeks of his death. In fact, the patient persisted, until the compression symptoms were too profound, to assure me that he felt well. These two considerations it seemed were sufficient to exclude brain abscess.

And yet the very rapid progress of the case made me hesitate at first in establishing a positive diagnosis. As far as I know, our case is a unique one in this regard. Almost all of the cases of brain tumor, which have been operated, and certainly those which have been successfully so, have in their history covered a period of years rather than months. I have read extensively, but find no brain tumor described, with so short a period of existence.

The early absence of headache, the almost never failing sign of intra-cranial pressure, and especially on its occurrence, the absence of fever, was unlike the expression of brain suppuration.

Percussion of the head produced pain just as it might with abscess. In both affections the pulse may be slow and labored.

It is said that the sudden changeability of symptoms is more characteristic of abscess. Yet in no case could there have been more marked changes than were often apparent in our patient in the course of twenty-four hours. One day in deep stupor, with urine being discharged unconsciously, and on the next engaging in conversation apparently with a clear mind.

H. C. Wood, in illustrating the point that the stupor of brain tumor may pass off rapidly, refers to a patient he had seen with a gliomatous tumor, absolutely comatose for several days, passing his discharges involuntarily and thought to be dying, a few hours later walked to the clinic room in a distant part of the hospital.

I regret extremely the failure to make an ophthalmoscopic examination in this case. For although optic neuritis is much more commonly encountered in cerebral tumor, the review of cases shows that it is by no means always absent in brain ab-

success. Yet J. Hughlings Jackson remarked in an address published in the *British Medical Journal*, July 21, 1889, "I have not yet seen a case followed by necropsy, the two symptoms, the epileptiform seizures and double optic neuritis co-existing, in which I did not find cerebral tumor."

That it is impossible to localize a tumor situated in the motor area is generally conceded. It is, however, a much more difficult matter to determine the character and extent of the brain tumor.

Von Bergmann insists that we have no positive signs for establishing these points. Should it be of tubercular character as a majority of these tumors are, there will in all probability be tubercular disease of other organs to suggest the diagnosis.

It goes without saying that a thorough anti-syphilitic treatment should precede any determination to treat the case surgically. Nowhere in medicine does medicinal treatment more promptly accomplish its purpose than in the dissipation of syphilitic brain disease.

The period of time occupied by a tumor in its development is not to be overlooked. If, as in our case, it has grown rapidly, as is evident in the number of new brain centers that are speedily involved, it is apparent that there exists no well defined investment; but that the tumor must be of an infiltrating character.

I listened with great interest to the enthusiastic Keen, as he opened the discussion, in October last, at the meeting of the New York State Medical Association, on the diagnosis and surgical treatment of brain diseases, pleading as he did that in the light of recent advance, the cranial cavity should be invaded as freely as the abdomen is to-day.

If the teaching of Tait, that we are first to open the abdomen, and then make our diagnosis, is to be applied to the head, I fear much more harm than good is to come to the unfortunate patients affected with serious brain lesions. One cannot help be impressed with the searching study Von Bergmann has made of the 100 cases of brain tumors reported by Hale White as having been seen at Guy's Hospital between the years 1872 and 1884. Based entirely upon the post-mortem findings, 9 of the 100 cases could have been removed successfully. But as 9 of these 7 manifested no special symptoms by

which they could have been recognized during life, the number of operable cases was reduced to two. For this reason, Von Bergmann speaks discouragingly of the future of the operative relief of brain tumors, and lays down the rule that he who is to operate a brain tumor must know more of it than its location; he must also be certain that it can be enucleated.

And yet within a few years there have been, comparatively speaking, a great number of successful operations. So that I cannot but believe that with more exact methods of diagnosis a new field of legitimate work may open before us.

But with symptoms of deep compression, unconsciousness, coma, Cheyne Stokes breathing, no one would justify an operation. And as these symptoms rapidly presented themselves in our case while, prior to their appearance, I was indeed anxious to operate, with their coming I promptly abandoned the thought.

The autopsy showed how impossible would have been its removal.